CLAIMS:

I claim:

1. A method of processing sound data received at one or more microphones, the method comprising the steps of:

receiving a transmission having sound data and an audio source spatial data set relative to the one or more microphones;

determining, in a sound conditioning filter database having filters characterized by a stored set of coefficients wherein each stored set of filter coefficients is a function of at least one element of the audio source spatial data set, two or more stored sets of coefficients proximate to the at least one element of the audio source spatial data set;

interpolating between the determined two or more stored sets of coefficients;

convolving the sound data with a shaping filter having the interpolated filter coefficients; and

transmitting the resulting signal to a sound-producing array.

2. The method of claim 1 wherein the spatial data set comprises an audio source distance setting relative to the one or more microphones.

3. The method of claim 1 wherein the spatial data set comprises a first audio source angle of incidence relative to the one or more microphones.

4. The method of claim 3 wherein the spatial data set comprises an audio source distance setting relative to the one or more microphones.

5. The method of claim 3 wherein the spatial data set further comprises a second audio source angle of incidence relative to the one or more microphones, the second audio source angle of incidence being substantially orthogonal to the first audio source angle of incidence.

6. The method of claim 5 wherein the spatial data set comprises an audio source distance setting relative to the one or more microphones.

7. The method of claim 1 further comprising the step of determining a first audio source angle of incidence relative to the one or more microphones for inclusion in the spatial data set.

8. The method of claim 7 further comprising the steps of:

determining, for a voice-over-Internet Protocol session, a nominal audio source distance set point relative to the one or more microphones; and

determining an audio source distance setting relative to the determined nominal distance set point for inclusion in the spatial data set.

9. The method of claim 7 further comprising the step of determining a second audio source angle of incidence relative to the one or more microphones, the second audio source angle of incidence being substantially orthogonal to the first audio source angle of incidence for inclusion in the spatial data set.

10. The method of claim 9 further comprising the steps of:

determining, for a voice-over-Internet Protocol session, a nominal audio source distance set point relative to the one or more microphones; and

determining an audio source distance setting relative to the determined nominal distance set point for inclusion in the spatial data set.

11. The method of claim 1 further comprising the steps of:

encapsulating the sound data and an audio source spatial data set relative to the one or more microphones into packets;

transmitting via a network the packets; and

receiving and de-encapsulating from the packets the sound data and the audio source spatial data set.

12. The method of claim 1 further comprising the steps of:

encoding the sound data and an audio source spatial data set relative to the one or more microphones into telephone signals;

transmitting via a circuit switched network;

receiving and de-encoding from the telephone signals the sound data and the audio source spatial data set.

13. The method of claim 1 wherein the sound-producing array is comprised of headphones.

14. The method of claim 1 wherein the sound-producing array is comprised of a plurality of audio speakers.

15. A method of spatial filter tuning comprising

transmitting sound waves toward a subject having a torso and a head via a sound-producing array;

receiving the reflected sound waves via one or more microphones;

processing the received sound waves to determine time-relative changes in subject head orientation and subject torso orientation;

translating the determined time-relative changes in subject orientation into changes in an audio source spatial data set;

determining, in a sound conditioning filter database having filters characterized by a stored set of coefficients wherein each stored set of filter coefficients is a function of at least one element of the audio source spatial data set, two or more stored sets of coefficients proximate to the at least one element of the audio source spatial data set;

interpolating between the determined two or more stored sets of coefficients,

convolving the sound data with a shaping filter having the interpolated filter coefficients; and

transmitting the resulting signal to the sound-producing array.

16. The method of claim 15 wherein the spatial data set further comprises an audio source distance setting relative to the one or more microphones.

17. The method of claim 15 wherein the spatial data set comprises a first audio source angle of incidence relative to the one or more microphones.

18. The method of claim 17 wherein the spatial data set comprises an audio source distance setting relative to the one or more microphones.

19. The method of claim 17 wherein the spatial data set further comprises a second audio source angle of incidence relative to the one or more microphones, the second audio source angle of incidence being substantially orthogonal to the first audio source angle of incidence.

20. The method of claim 19 wherein the spatial data set comprises an audio source distance setting relative to the one or more microphones.

21. The method of claim 15 further comprising the step of determining a first audio source angle of incidence relative to the one or more microphones for inclusion in the spatial data set.

22. The method of claim 15 further comprising the steps of:

determining, for a session, a nominal audio source distance set point relative to the one or more microphones; and

determining an audio source distance setting relative to the determined nominal distance set point for inclusion in the spatial data set.

23. The method of claim 15 further comprising the step of determining a second audio source angle of incidence relative to the one or more microphones, the second audio

source angle of incidence being substantially orthogonal to the first audio source angle of incidence for inclusion in the spatial data set.

24. The method of claim 15 wherein the sound-producing array is comprised of headphones.

25. The method of claim 15 wherein the sound-producing array is comprised of a plurality of audio speakers.

26. A system for spatial audio source tracking and representation comprising:
one or more microphones;
a microphone processing interface for providing a sound data stream and an audio source spatial data set;
a processor for modifying spatial filters based on the audio source spatial data set and for shaping the sound data stream with modified spatial filters; and a
sound-producing array.

27. The system of claim 26 wherein the spatial data set comprises an audio source distance setting relative to the one or more microphones.

28. The system of claim 26 wherein the spatial data set comprises a first audio source angle of incidence relative to the one or more microphones.

29. The system of claim 28 wherein the spatial data set comprises an audio source distance setting relative to the one or more microphones.

30. The system of claim 28 wherein the spatial data set further comprises a second audio source angle of incidence relative to the one or more microphones, the second audio source angle of incidence being substantially orthogonal to the first audio source angle of incidence.

31. The system of claim 30 wherein the spatial data set comprises an audio source distance setting relative to the one or more microphones.

32. The system of claim 26 wherein the system further comprises:

a first communication processing interface for encapsulating the sound data and an audio source spatial data set relative to the one or more microphones into packets; and transmitting via a network the packets; and

a second communication processing interface for receiving the packets and de-encapsulating sound data and the audio source spatial data set.

33. The system of claim 26 wherein the system further comprises:

a first communication processing interface for encoding the sound data and an audio source spatial data set relative to the one or more microphones into telephone signals; and transmitting via a circuit switched network; and

a second communication processing interface for receiving the telephone signal and de-encoding the sound data and the audio source spatial data set.

34. The system of claim 26 wherein the sound-producing array is comprised of headphones.

35. The system of claim 26 wherein the sound-producing array is comprised of a plurality of audio speakers.